

Image

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Noriaki KUDO et al.

Group Art Unit: 1711

Application No.: 09/730,823

Examiner: A. Woodward

Filed: December 7, 2000

Docket No.: 108062

For: POLYAMIC ACID VARNISH COMPOSITION AND A FLEXIBLE PRINTED BOARD

REQUEST FOR RECONSIDERATION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In reply to the December 12, 2003 Office Action, reconsideration of the rejection is respectfully requested in light of the following remarks.

Claims 1-7, 9 and 10 are pending. Claims 1-6 have been withdrawn from consideration.

Rejection Under 35 U.S.C. §103(a)

The Office Action rejects claims 7, 9 and 10 under 35 U.S.C. §103(a) over U.S. Patent No. 6,346,598 to Hashimoto et al. ("Hashimoto") in view of U.S. Patent No. 4,496,715 to Sattler ("Sattler"). Applicants respectfully traverse the rejection.

Claim 7 recites "[a] flexible printed board comprising a polyimide insulating layer furnished on a metal foil, the polyimide insulating layer being formed by forming a film of a polyamic acid varnish composition on the metal foil, and subsequently imidizing the polyamic acid varnish composition; wherein: the polyamic acid varnish composition

comprises a polyamic acid obtained by addition polymerization of an aromatic diamine and an aromatic acid dianhydride, a solvent, and an imidazolyl-diaminoazine; the imidazolyl-diaminoazine is present at a ratio of 0.1 to 10 wt parts per 100 wt parts polyamic acid ... ; and the imidazolyl-diaminoazine is selected from the group consisting of ... "

(emphasis added). Hashimoto does not teach or suggest such a flexible printed circuit board. Sattler does not remedy the deficiencies of Hashimoto.

The Office Action asserts that Hashimoto discloses a thermosetting polyimide composition that is used in a flexible printed board where the substrate is a metal foil and the polyimide is imidized after the application to the foil. Hashimoto allegedly teaches that the polyimide is synthesized from a mixture containing an aromatic diamine, an aromatic acid dianhydride and a solvent, along with a reaction promoter such as an imidazolyl-diaminoazine. Sattler is cited for its alleged teaching that the amounts of reaction promoter recited in claim 7 are typical. Notwithstanding these allegations, Hashimoto and Sattler do not teach or suggest the flexible printed circuit board of claim 7.

It is undisputed that none of the cited references disclose, either alone or in combination, a polyamic acid varnish composition comprising a polyamic acid obtained by addition polymerization of an aromatic diamine and an aromatic acid dianhydride and a solvent, along with one of the imidazolyl-diaminoazines recited in claim 7 in an amount of 0.1 to 10 wt parts per 100 wt parts polyamic acid. This rejection is founded on the assertion in the Office Action that it would have been obvious to select the imidazolyl-diaminoazines recited in claim 7 in view of the disclosure of 2,4-diamino-6-[2'-methylimidazolyl(1')]-ethyl-s-triazine, 2,4-diamino-6-[2'-ethyl-4-methylimidazolyl-(1')]-ethyl-s-triazine and 2,4-diamino-6-[2'-undecylimidazolyl-(1')]-ethyl-s-triazine as reaction promoters in Hashimoto. C13/L43-47. Claim 7 does not recite any of these three compounds. Further, there is no teaching or suggestion in Hashimoto to select any of these three compounds for use in a polyamic acid

varnish composition, much less the imidazolyl-diaminoazines of claim 7, which the Office Action alleges are analogs of the three compounds recited in Hashimoto.

To sustain a *prima facie* case of obviousness, it must be demonstrated that one of ordinary skill in the art would have been motivated to select the claimed compounds in view of the teachings of the prior art. MPEP 2144.08(II)(A)(4). The MPEP sets forth six criteria on which to evaluate whether such motivation is present: (a) the size of the prior art genus, (b) the express teaching of a particular reason to select the claimed compound, (c) the teaching of preferred compounds that are structurally similar to the claimed compound, (d) functional similarities between the claimed invention and structurally similar prior art compounds, (e) the predictability of the technology and (f) any other teaching to support selection of the claimed compounds. Weighing these factors, it is apparent that one of ordinary skill in the art would not have been motivated to select the imidazolyl-diaminoazines of claim 7 based upon the teachings of Hashimoto.

At the outset, it should be appreciated that Hashimoto cannot be said to teach or suggest the imidazolyl-diaminoazines of claim 7 -- at best, Hashimoto can be said to teach or suggest compounds that are alleged to be structurally similar. As explained below, Hashimoto does not even suggest selection of these alleged structural analogs. The prior art genus (reaction promoters) in Hashimoto is enormous. The list of reaction promoters in which the three compounds cited in the Office Action appear includes 106 compounds. C12/L57-C13/L63. There is no teaching in Hashimoto suggesting that the particular three compounds identified in the Office Action should be selected for use from this list of 106 compounds. Hashimoto does not appear to favor any of the compounds. Moreover, the three compounds identified in the Office Action do not appear in any of the 89 Examples of Hashimoto. In fact, the Examples do not appear to suggest the use of a reaction promoter at all. There is no disclosure in Hashimoto that would lead one to believe that the three

compounds identified in the Office Action are functionally identical to the imidazolyl-diaminoazines of claim 7.

Viewing Hashimoto as a whole, there is no teaching or suggestion that the three compounds identified in the Office Action should be selected from the list of reaction promoters in Hashimoto. Even if such teaching or suggestion were present, there is no teaching or suggestion that would lead one of ordinary skill in the art to then select the different imidazolyl-diaminoazines of claim 7 in view of the disclosure of the three compounds identified in the Office Action. It is only through use of impermissible hindsight that one of ordinary skill in the art would employ the imidazolyl-diaminoazines of claim 7 having viewed Hashimoto.

Sattler does not cure the deficiencies of Hashimoto. It is undisputed that Sattler provides no teaching or suggestion with respect to the imidazolyl-diaminoazines of claim 7. Notwithstanding the failure of Hashimoto and Sattler to teach or suggest imidazolyl-diaminoazines of claim 7, the Office Action cites Sattler for its teaching of employing tetraisopropyl titanate (IPT) in amounts falling within the range of amounts of imidazolyl-diaminoazine recited in claim 7 (0.1 to 10 wt parts). First, there is no teaching in either of the references that IPT is equivalent to any of the reaction promoters recited in Hashimoto -- there are no titanates of any kind in the list of reaction promoters in Hashimoto. As there is no teaching that IPT is in any way equivalent to the reaction promoters of Hashimoto, one of ordinary skill in the art would not assume that the quantities of IPT used in a particular reaction would be applicable to the reaction promoters of Hashimoto in a different reaction. Second, IPT is described in Sattler as a catalyst. See, e.g., C3/L63-66; C5/L46-50. The unpredictability in the field of catalysis is well known. See, e.g., In re Angstadt, 537 F.2d 498, 503 (C.C.P.A. 1976). The applicability of reaction amounts of one compound to structurally dissimilar compounds in an unpredictable art is speculative, and

would not be deemed as obvious by one of ordinary skill in the art. For the foregoing reasons, Hashimoto and Sattler do not teach or suggest the combination of features recited in claim 7.

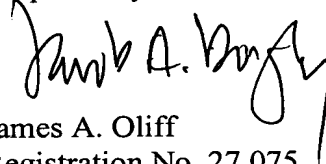
Claim 7 would not have been rendered obvious by Hashimoto and Sattler. Claims 9 and 10 depend from claim 7, and thus also would not have been rendered obvious by claim 7. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-7, 9 and 10 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



James A. Oliff
Registration No. 27,075

Jacob A. Doughty
Registration No. 46,671

JAO:JAD/hs

Date: March 11, 2004

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

<p>DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p>
--